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650 REVIEWS

Veins barren of silver are widely scattered throughout the southern part of the state and include most of the deposits examined. They are most common in Tertiary lavas. The ore-shoots vary greatly in size. The ore consists of oxides derived from the weathering of vein material, hence its depth depends largely on the permeability of the rock to circulating water. The ore minerals are psilomelane, pyrolusite, and manganite; these are accompanied by barite, calcite, and iron oxide.

Bedded deposits vary as to character and associated rocks. They may be contained in tuffs, or they may be the result of replacement of sandstone. They are generally of Tertiary age. Such deposits do not extend to great depths and are worked through shallow pits and shafts. The manganese minerals are psilomelane, pyrolusite, manganite, and subordinately braunite. Quartz, feldspar, iron ores, and calcite are the chief gangue minerals—partly secondary, partly the unreplaced minerals of the rock. Much of this ore, developed in sandstones and only partially replacing the country rock, is siliceous.

Manganese ore associated with travertine is known from one locality only; here the travertine and the clayey manganese-bearing beds are capped by basalt. The manganese mineral is principally botryoidal and vesicular psilomelane.

A detailed description of the geography, geology, and manganese deposits of each of the districts is given; for these the reader is referred directly to the carefully prepared paper itself.

C. H. B., Jr.

World Atlas of Commercial Geology; Part I, Distribution of Mineral Production. United States Geological Survey, 1921. Pp. 72, pls. 72.

The purpose of this atlas, prepared by more than a score of geologists, is "to set forth graphically and to describe concisely the basic facts concerning both the present and the future sources of the useful minerals." Part I deals chiefly with present sources; later parts will exhibit, so far as practicable, the mineral reserves of the world. The maps of Part I, which deal with the most important thirty mineral commodities, are arranged in groups of eight, each group containing (1) a map of the world showing production and, for major commodities, consumption by countries in 1913, the last year of normal production; (2) a map of each of the continents, indicating production by countries, districts, or fields, in percentages of the world's production in 1913; and (3) a map of the United States, exhibiting production in 1918 by states, districts, or fields, in percentages of the total output of the country.

REVIEWS 651

The accompanying text presents briefly and effectively fundamental facts concerning the various minerals, under headings such as uses, geologic occurrence, geographic distribution, technology, centers of consumption, and the like.

The atlas is an outgrowth of investigations of mineral problems begun during the war, investigations of a type too long delayed in this country, for the facts concerning the distribution, quality and quantity, availability, and commercial and political control of the world's mineral resources are destined to affect increasingly our trade and industries and our relations with other peoples.

HARLAN H. BARROWS

An Introduction to Paleontology. By A. Morley Davies. London: Thos. Murby & Co.; New York: D. Van Nostrand & Co.

Mr. Davies has planned his book with the intention of making it, above all else, a practical, usable textbook for courses in the elements of paleontology. To this end, he begins with those animals which are most common as fossils, and which can be studied most easily by the beginner—the Brachiopoda. He first describes certain common species, in order to give the student a clear idea of the general characters of the group, and then presents a brief, but tolerably adequate, account of the entire class.

From the Brachiopoda the author carries his text along the ascending scale, through the vertebrates. He then returns, begins with the Echinodermata, and follows the descending order, finishing with the Protozoa. The system of treatment violates tradition, and certainly has the disadvantage of leaving a beginning student in something of a muddle as regards classification. But it has the advantage of beginning with the easy, and proceeding to the difficult, and parallels the system of treatment used in several of the more recent and progressive high-school texts in zoölogy.

On the other hand, Mr. Davies has adopted a few innovations that are neither advantageous nor, so far as can be seen, justifiable. There is no clear ground for separating the Molluscoidea into two groups, and putting the Bryozoa with the corals; neither is it plain why the Pythonomorpha have been omitted entirely, and the Aves reduced to an order among the Reptilia. These are points that an instructor may correct, but it is not clear why he should be forced to do so.

C. L. F.